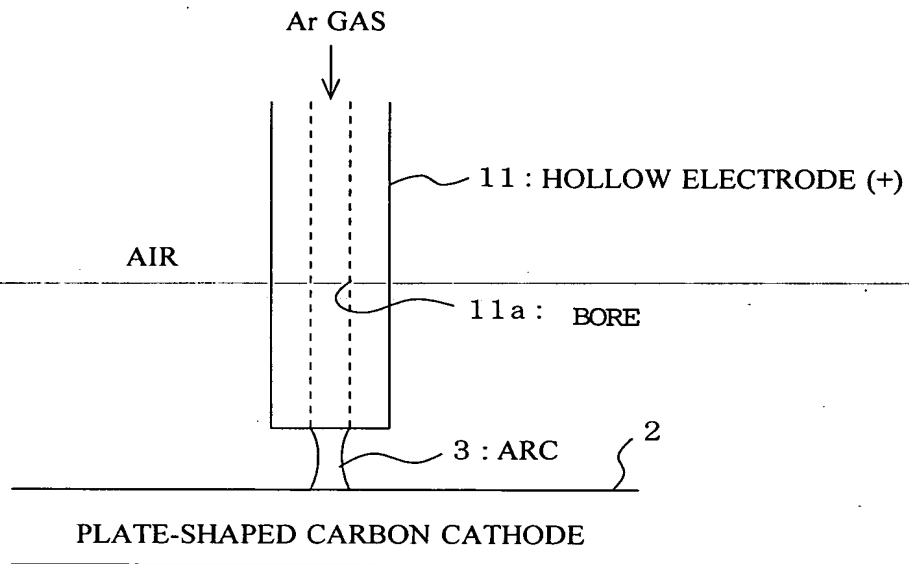


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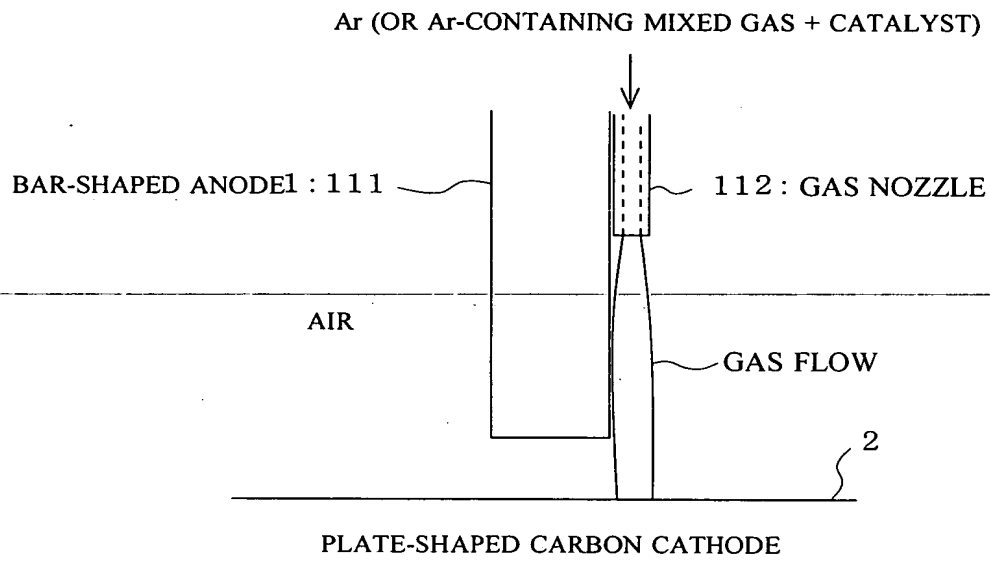
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FIG. 1



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FIG. 2

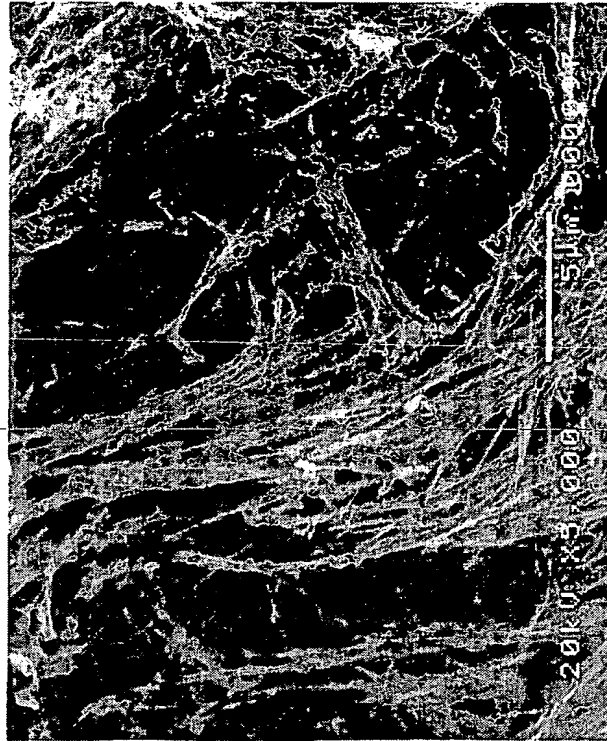


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FIG. 3

(b)



(a)

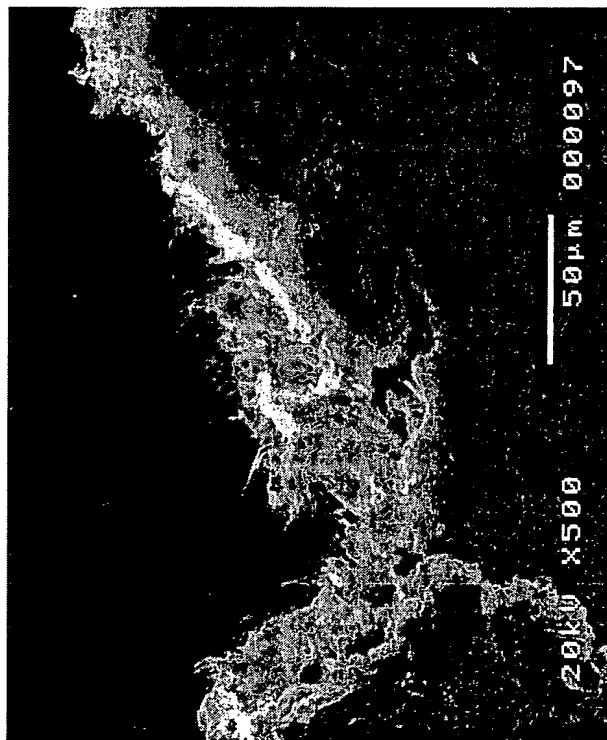
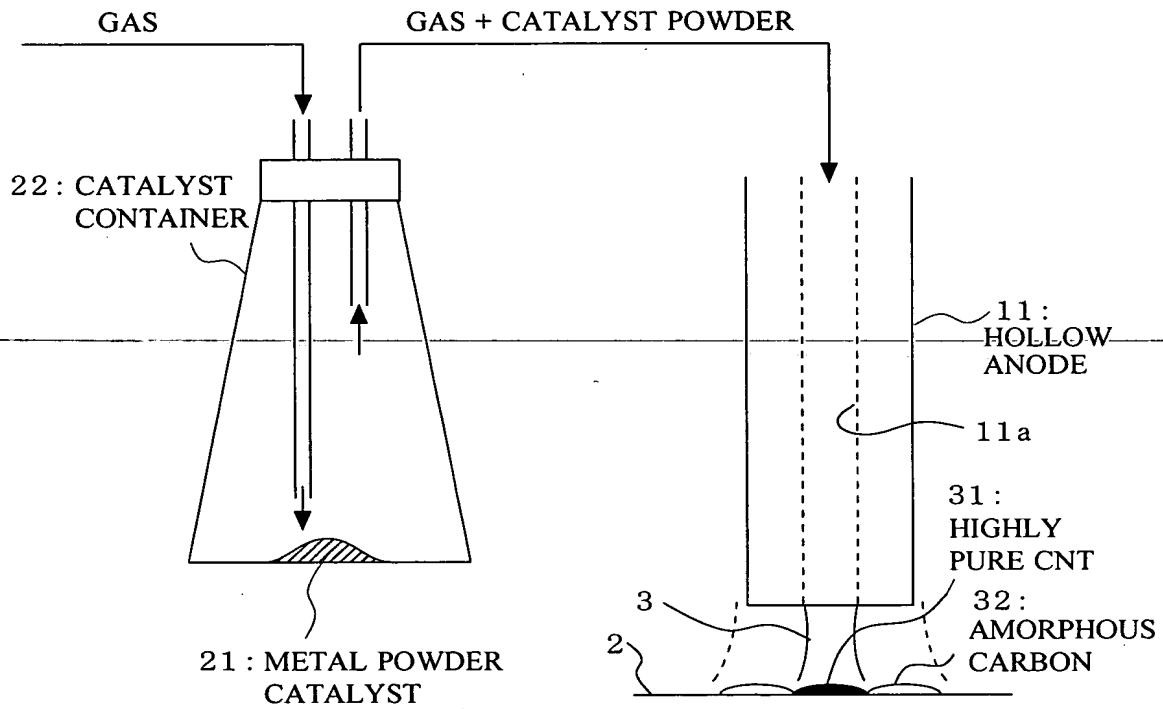


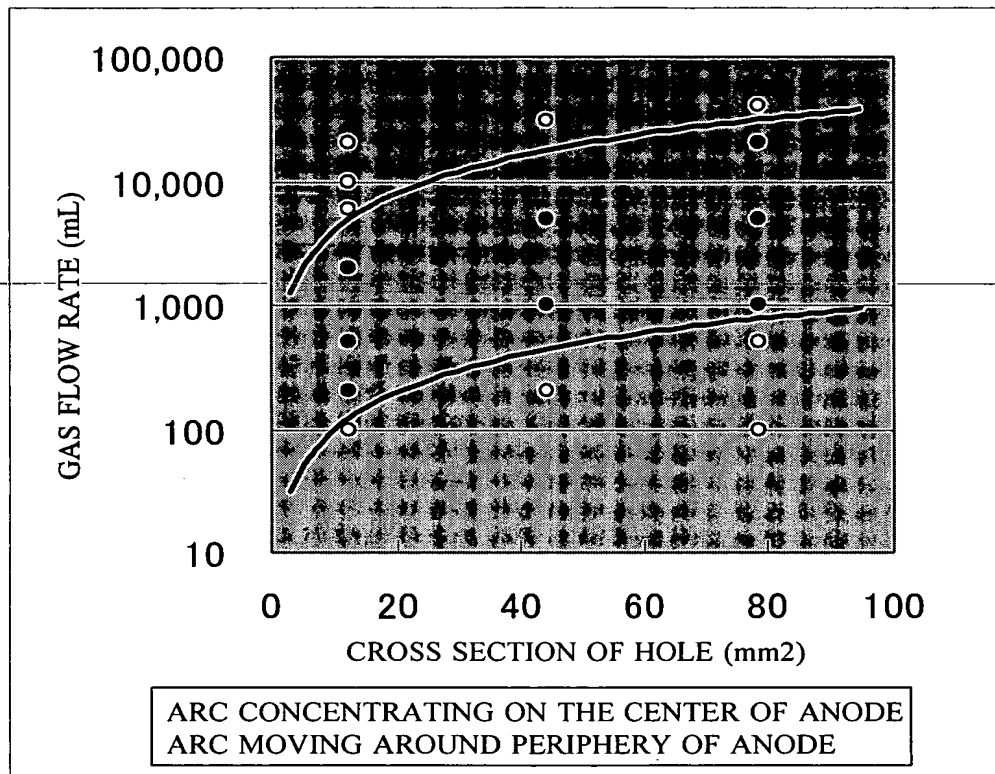
FIG. 4



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FIG. 5

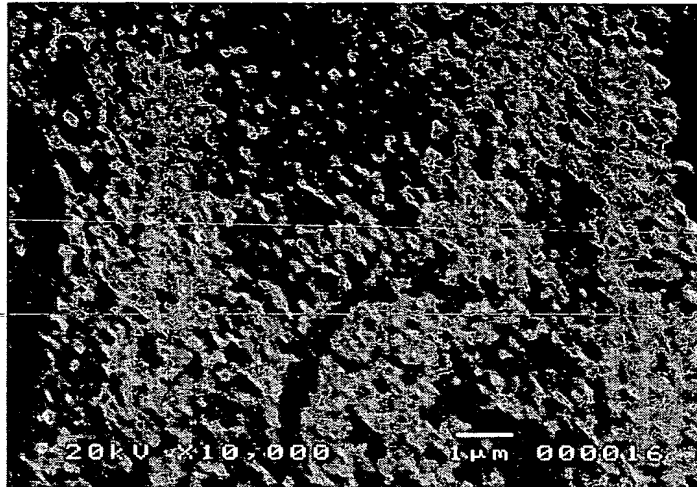


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FIG. 6

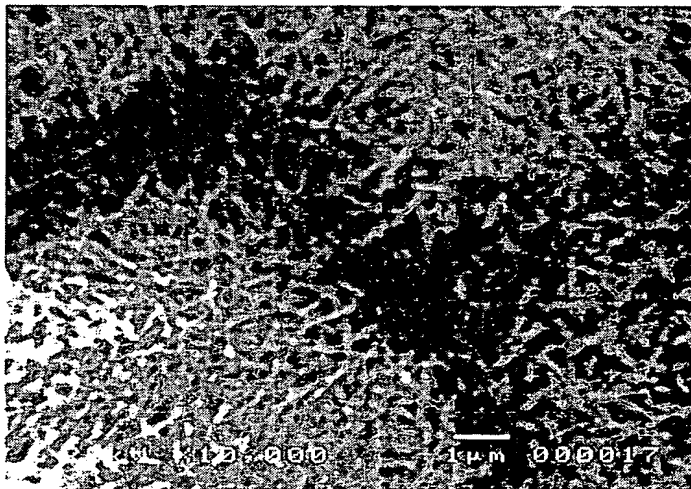
NOT PREHEATED

(a)



500°C

(b)

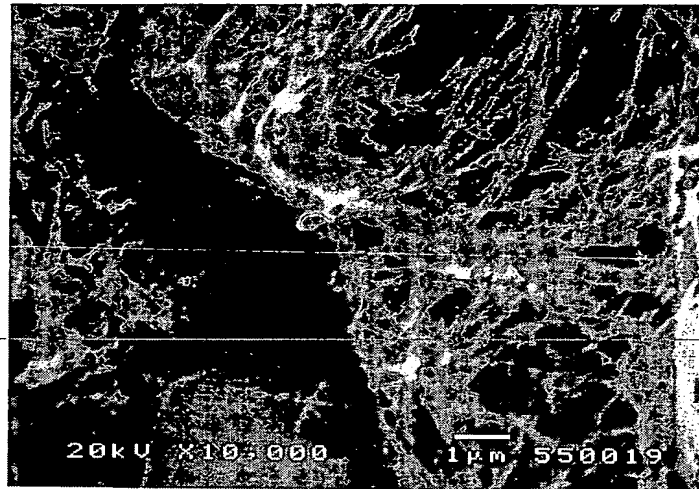


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FIG. 7

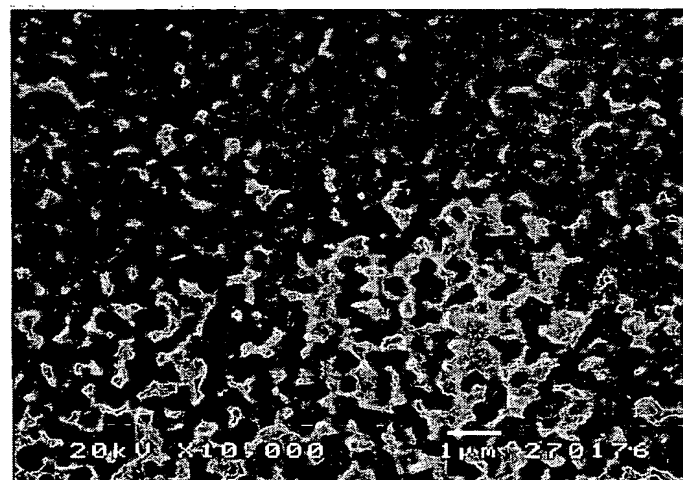
2000°C

(a)



2500°C

(b)



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FIG. 8

Carbon material	A	B	C	D	E	F	G
Volume density (g/cm ³)	1.66	1.75	1.85	1.68	1.78	1.70	1.75
Shore hardness (HSC)	65	35	60	65	90	100	50
Specific resistance ($\mu \Omega \cdot \text{cm}$)	5900	680	1200	2000	3500	4600	11000
Bending strength (Mpa)	28	24.5	63.7	44.1	60.8	58.5	29
Ash content (%)	0.32	0.1	0.08	0.2	0.3	0.1	0.3
Thermal conductivity (W/m·K)	23	162	128	85	52	31	20
Forming method	extrusion	extrusion	CIP	Molding	Molding	Molding	Molding
Constituent	Carbon	Graphite	Graphite	Carbon + Graphite	Carbon + Graphite	Carbon	Carbon
CNT yield	○	×	△	△	△	○	○
CNT purity	○	×	×	×	△	○	○
	Indication	○: good	△: fair	×: bad			

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FIG. 9

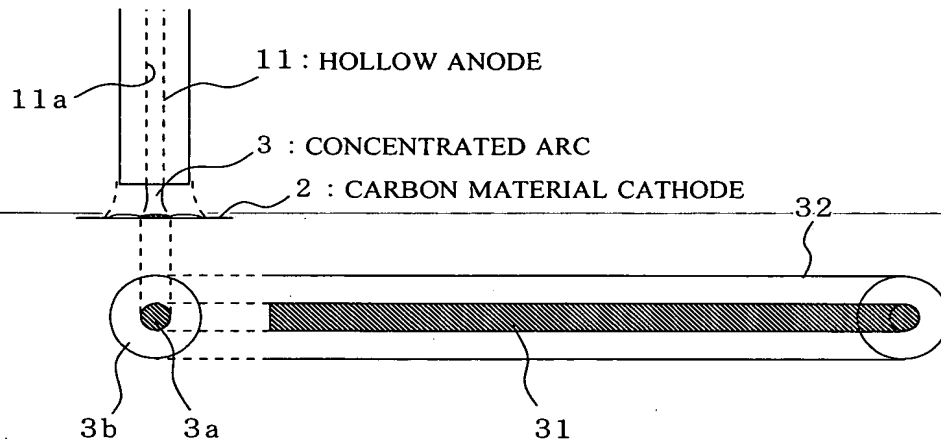
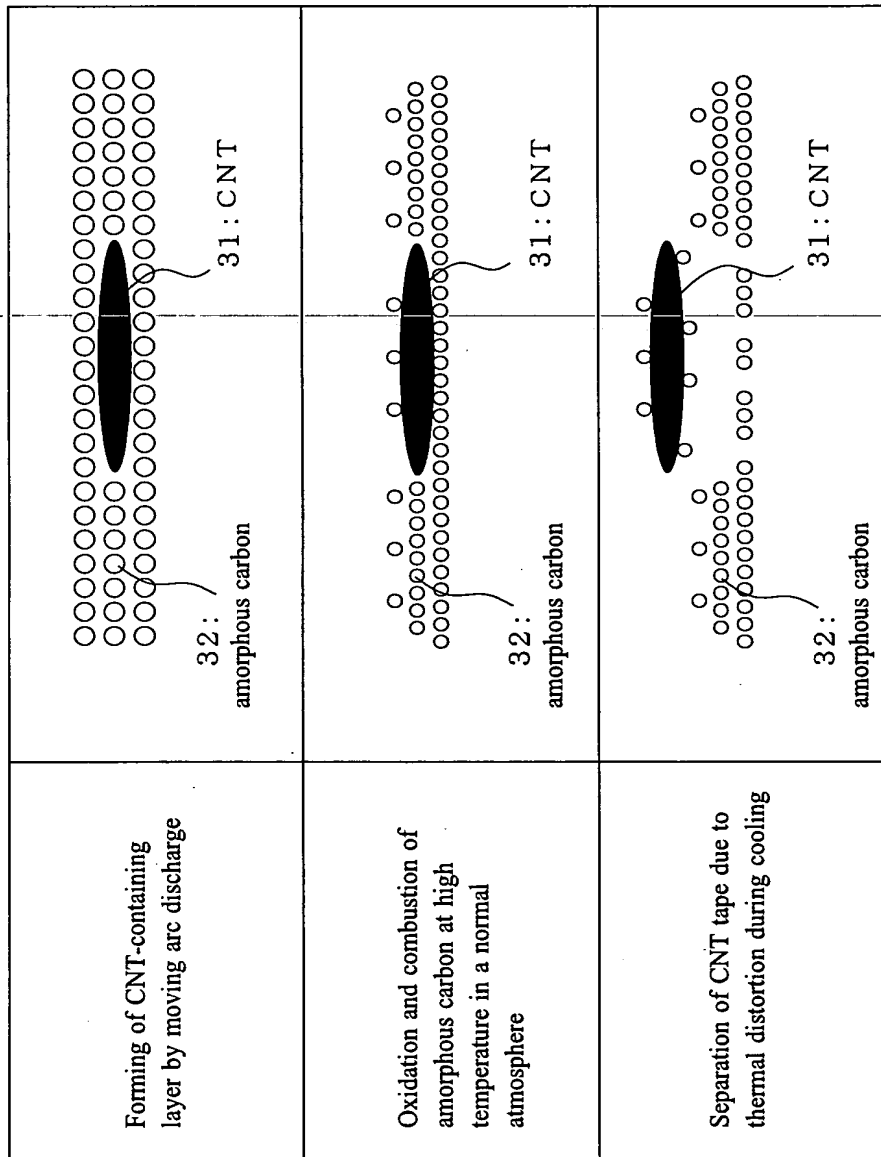
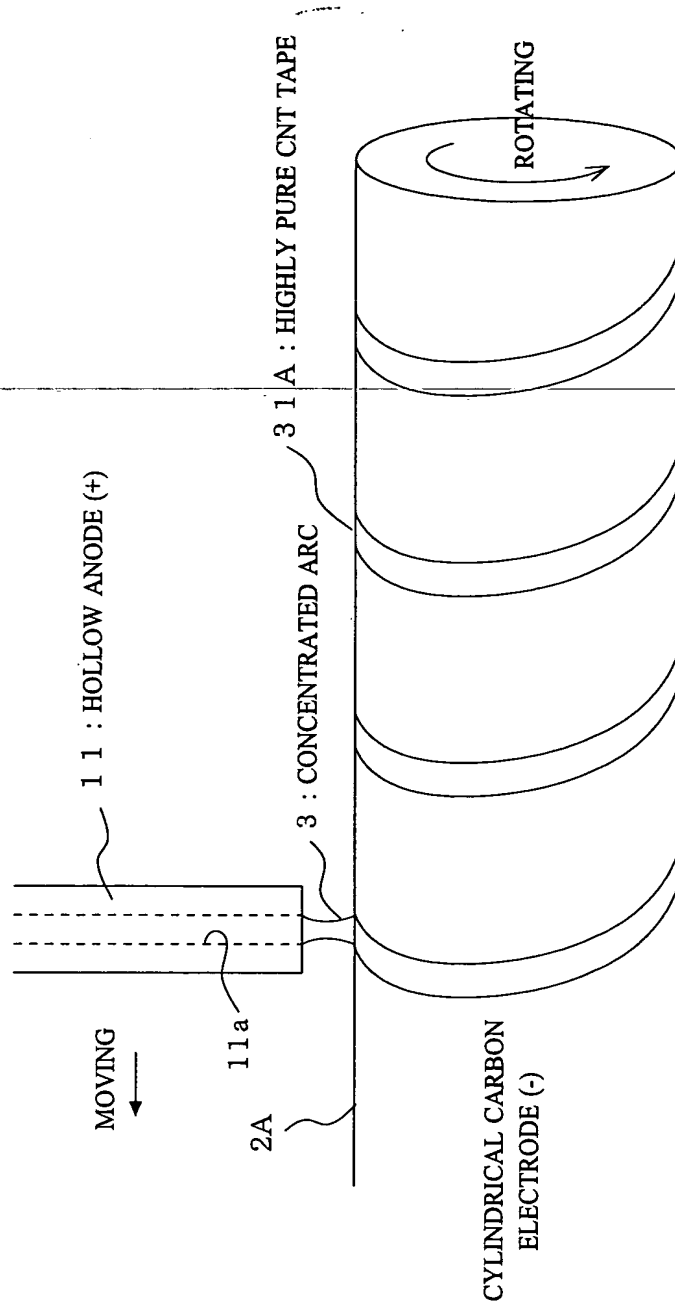


FIG. 10



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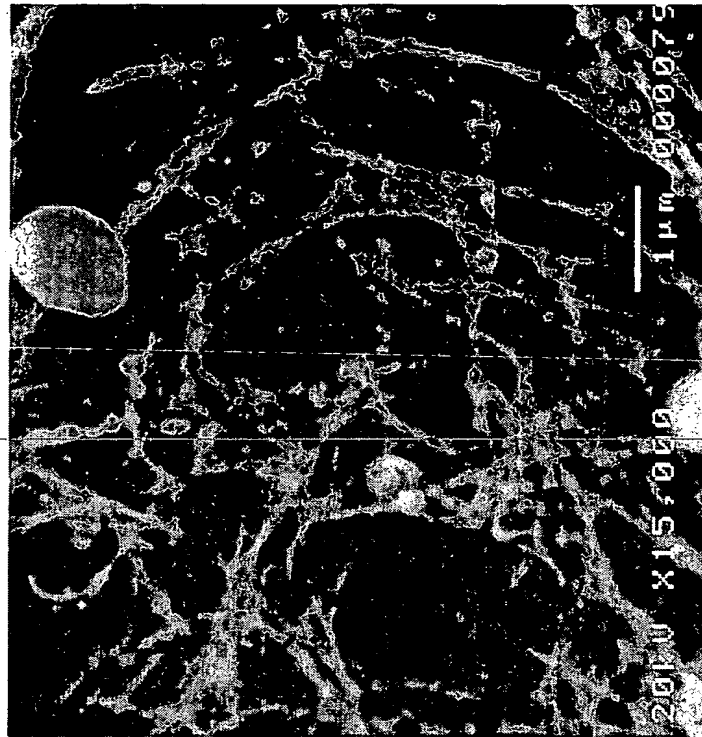
FIG. 11



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FIG. 12

(b)



(a)

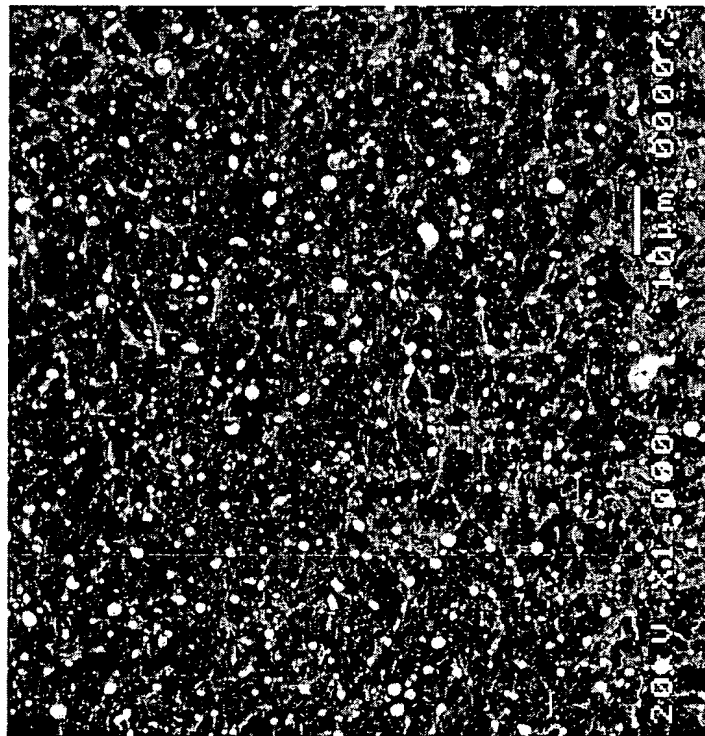
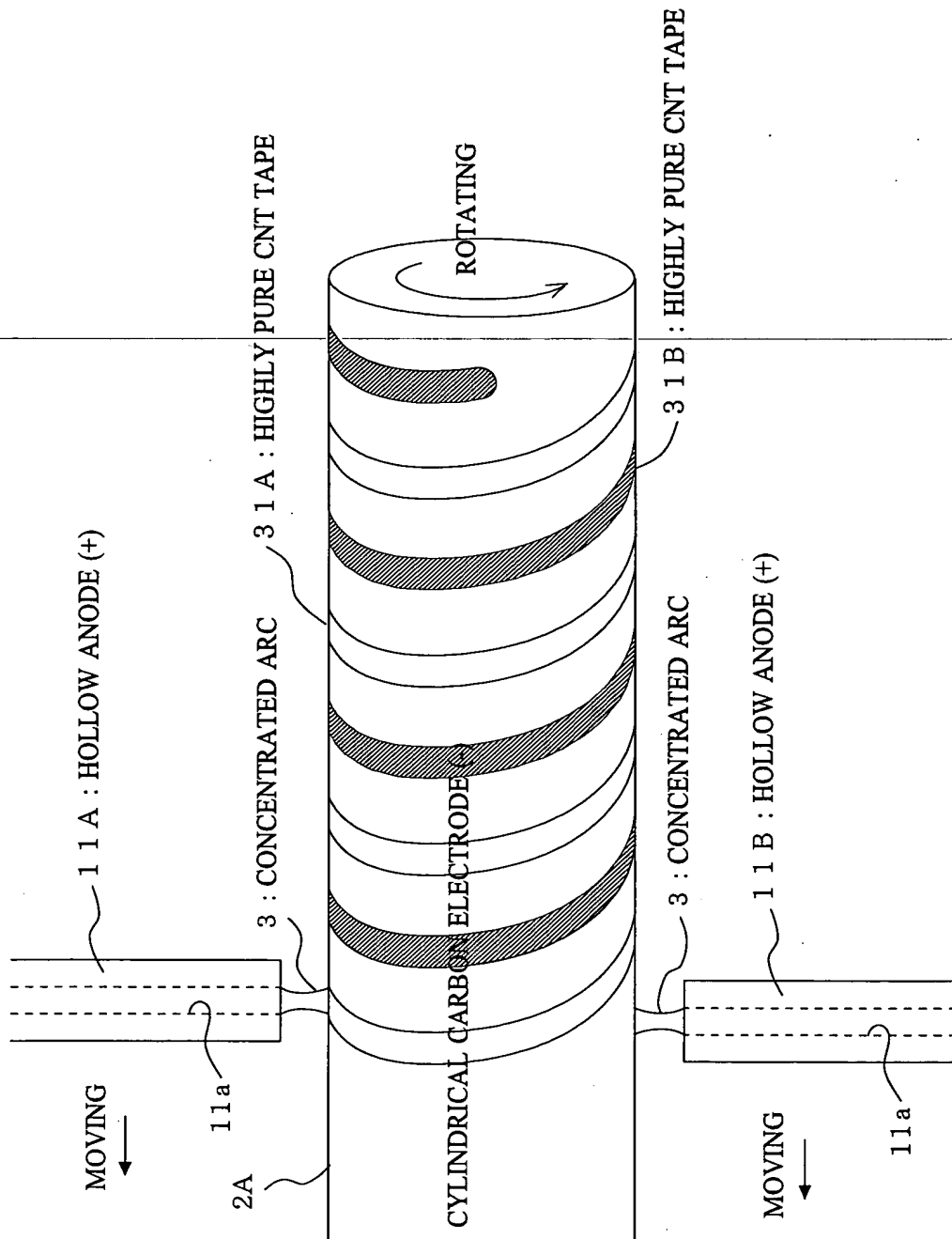


FIG. 13



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FIG. 14

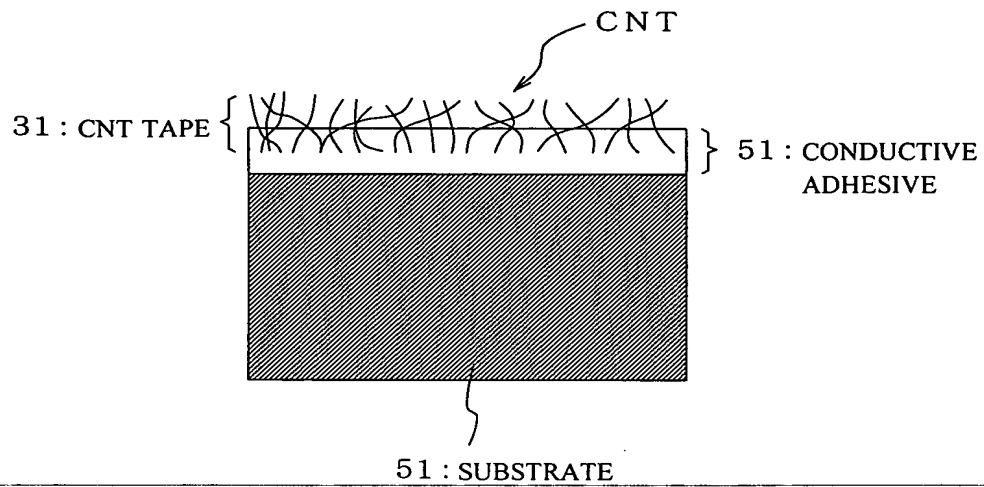
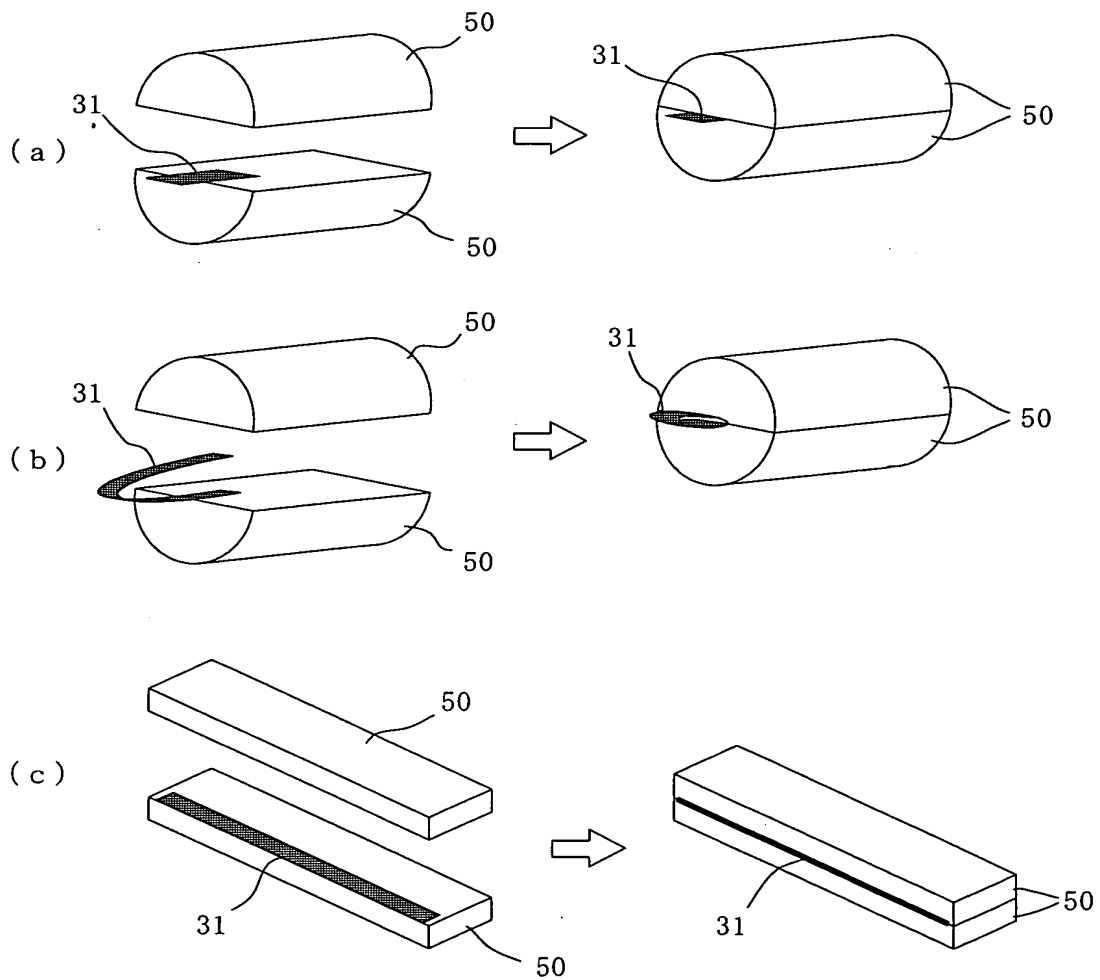


FIG. 15



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FIG. 16

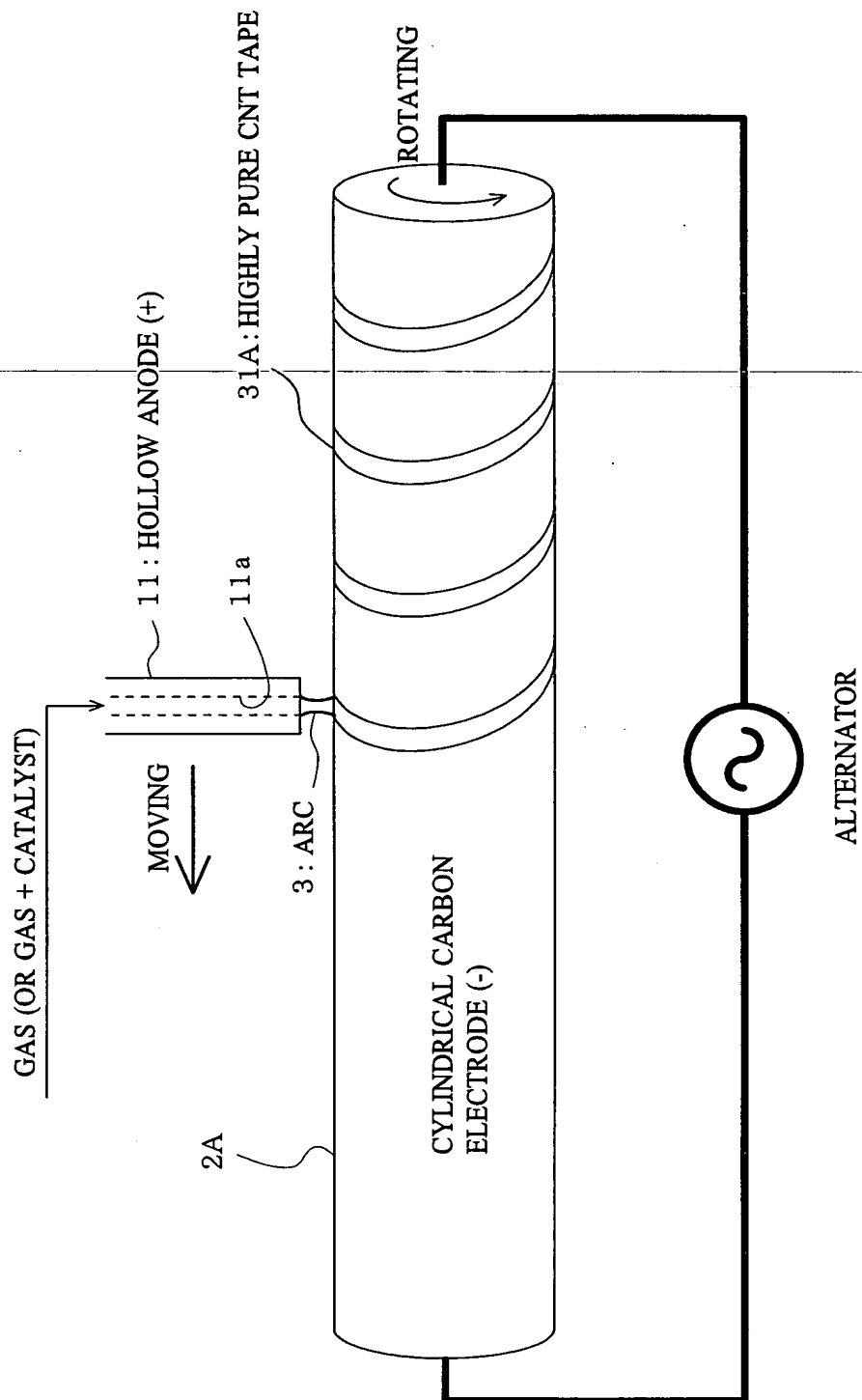


FIG. 17

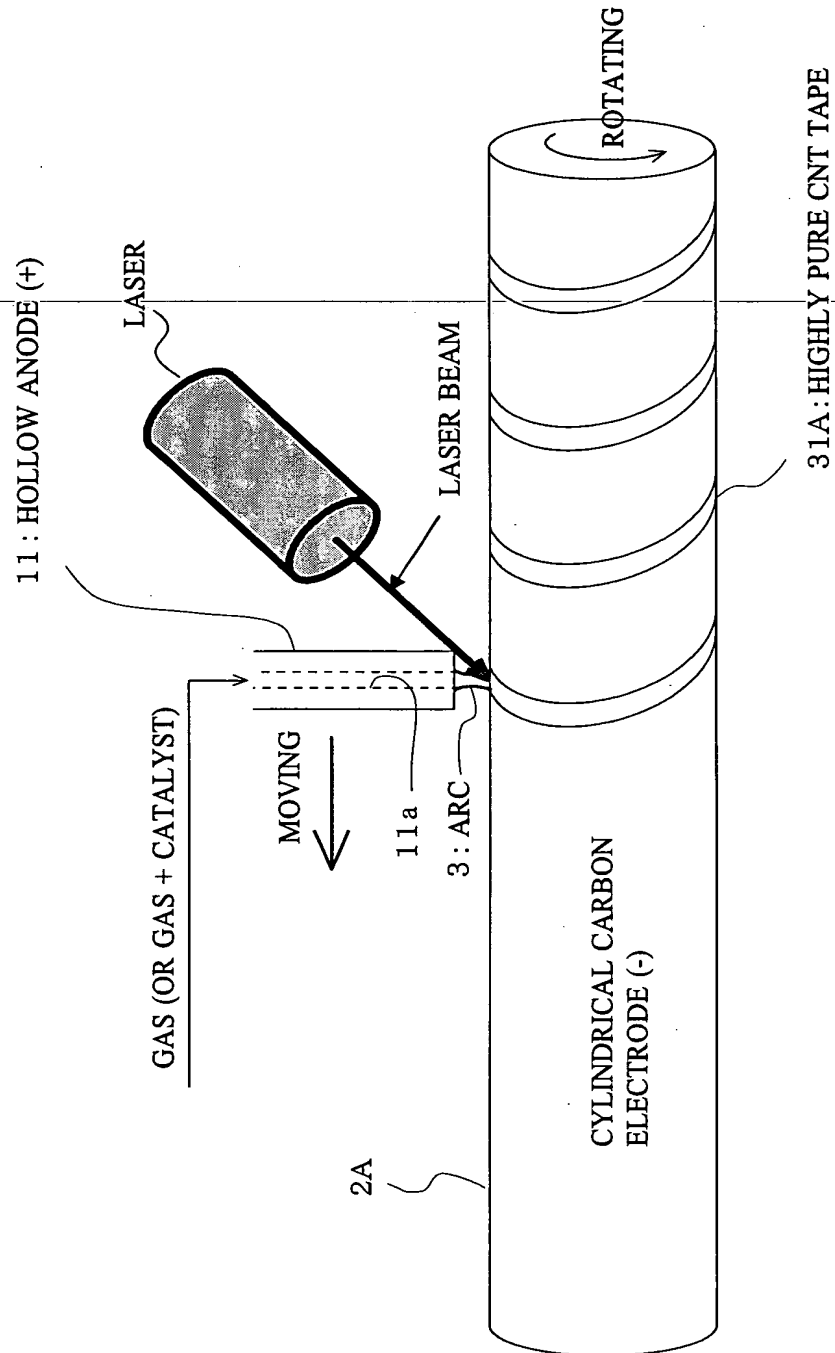


FIG. 18

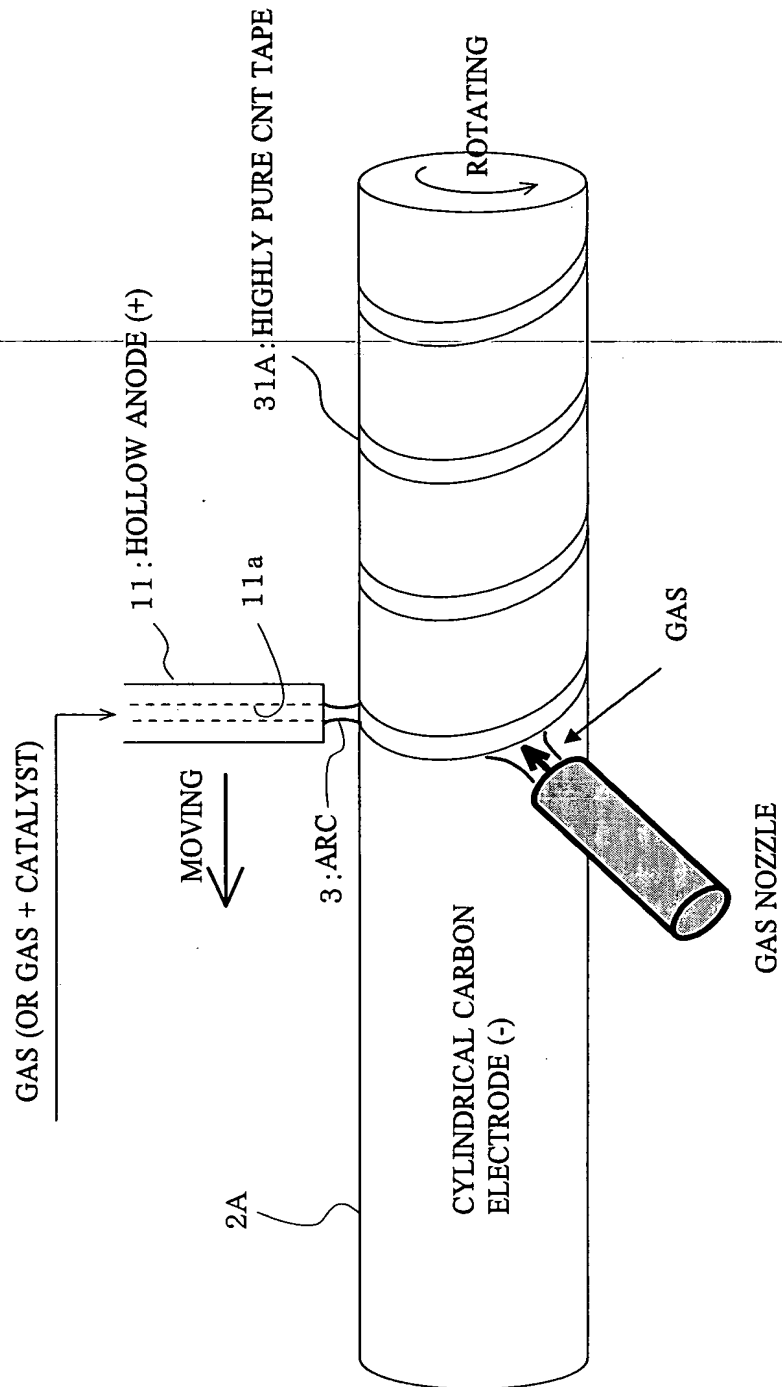
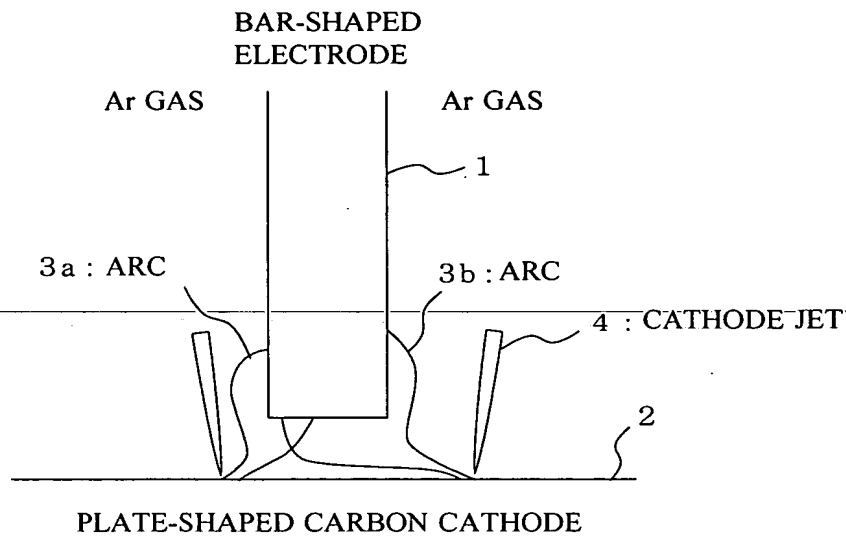
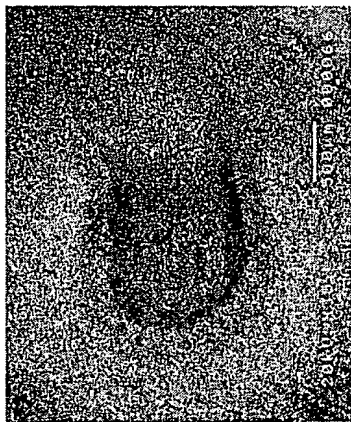


FIG. 19

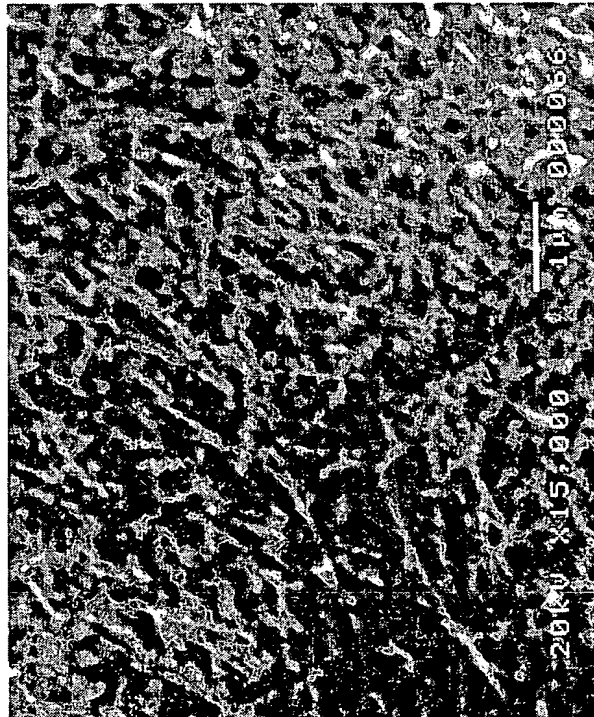


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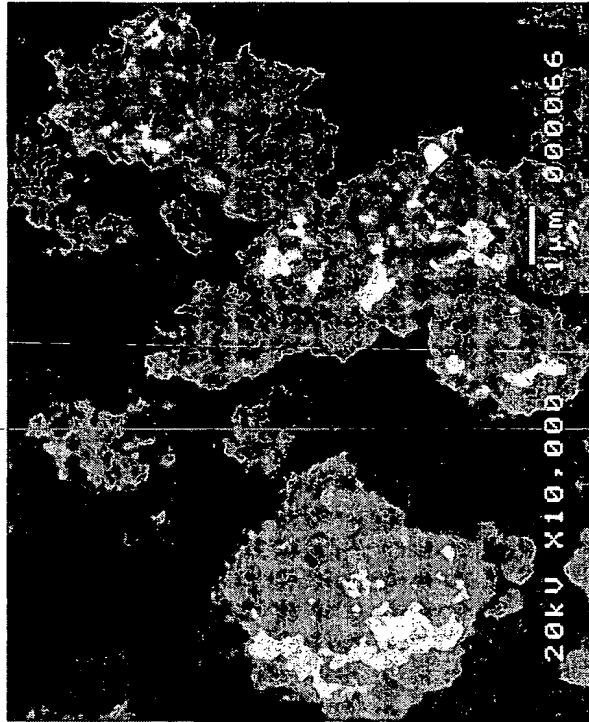
FIG. 20



(a)



(b)



(c)

FIG. 21

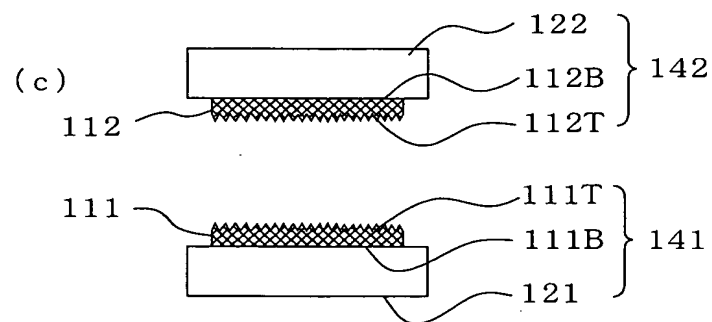
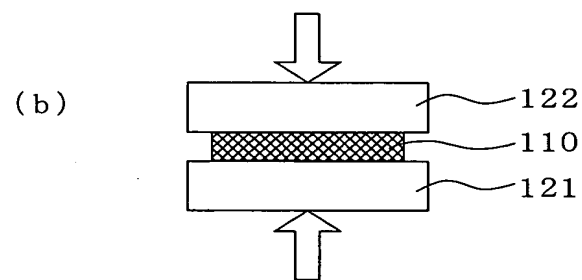
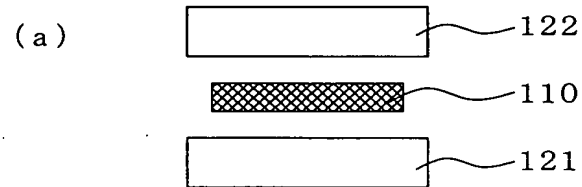


FIG. 22

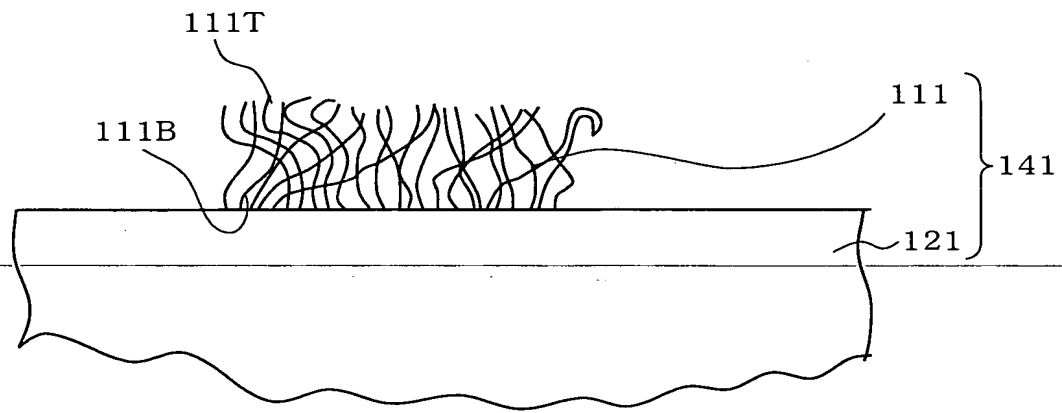


FIG. 23

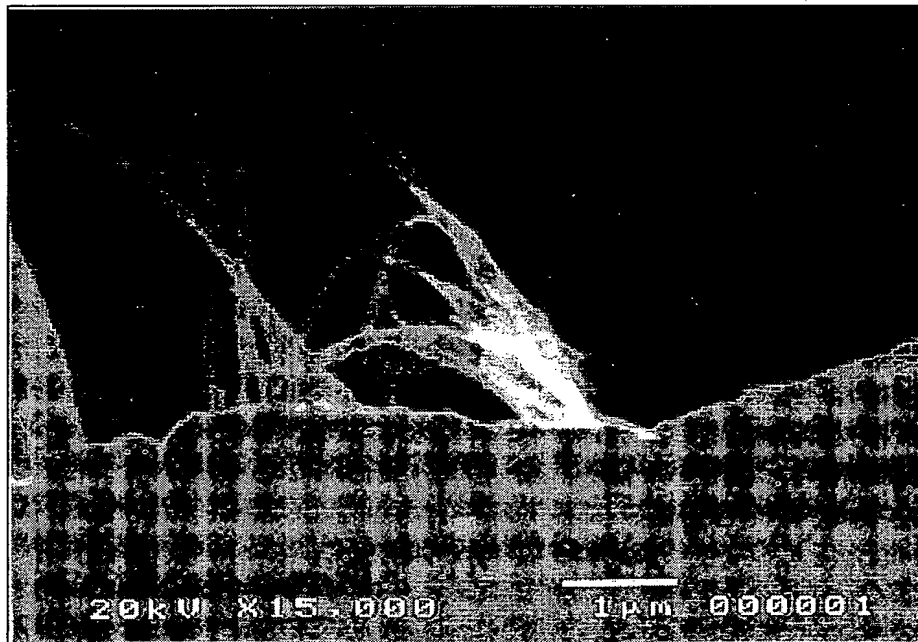


FIG. 24

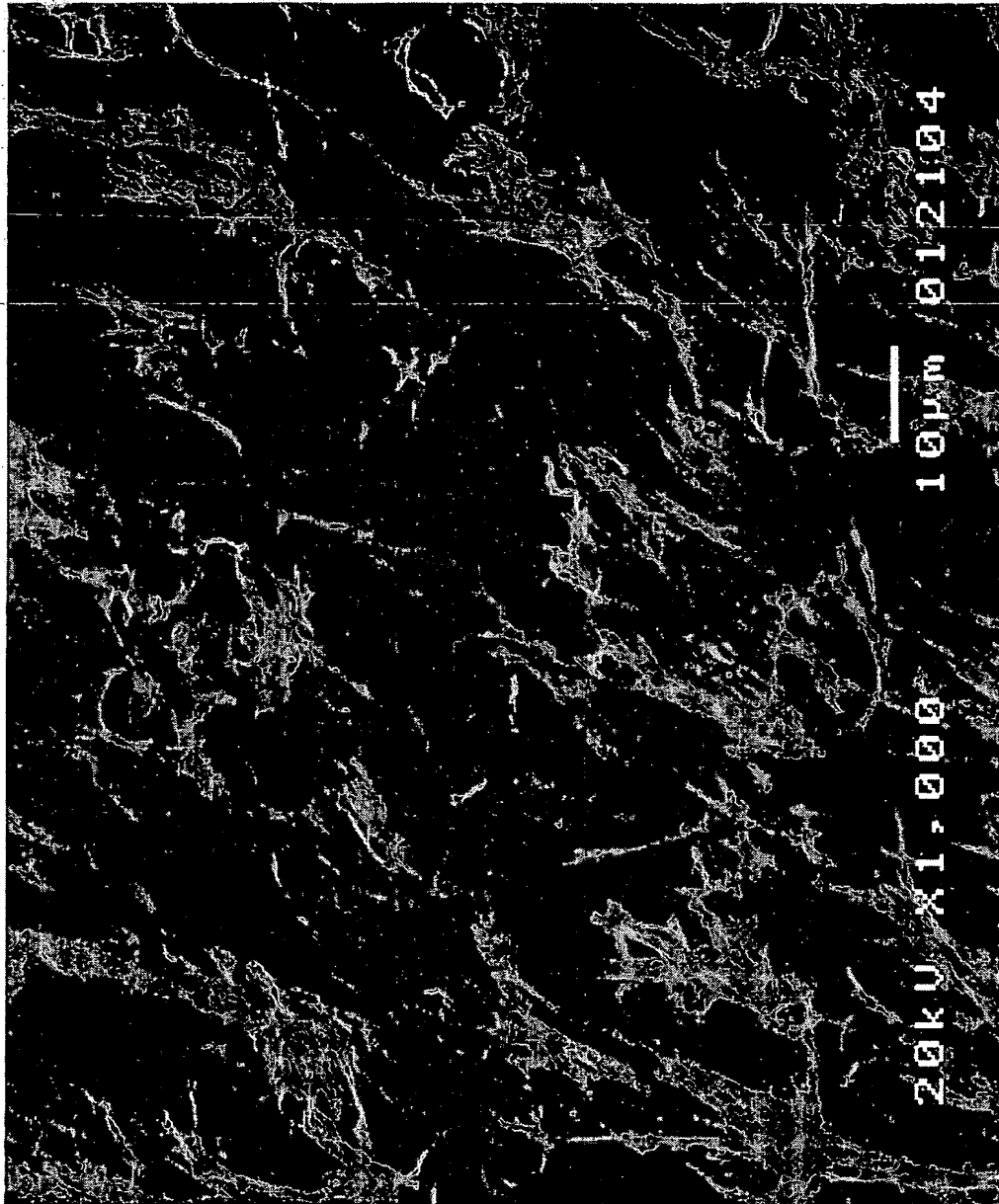


FIG. 25

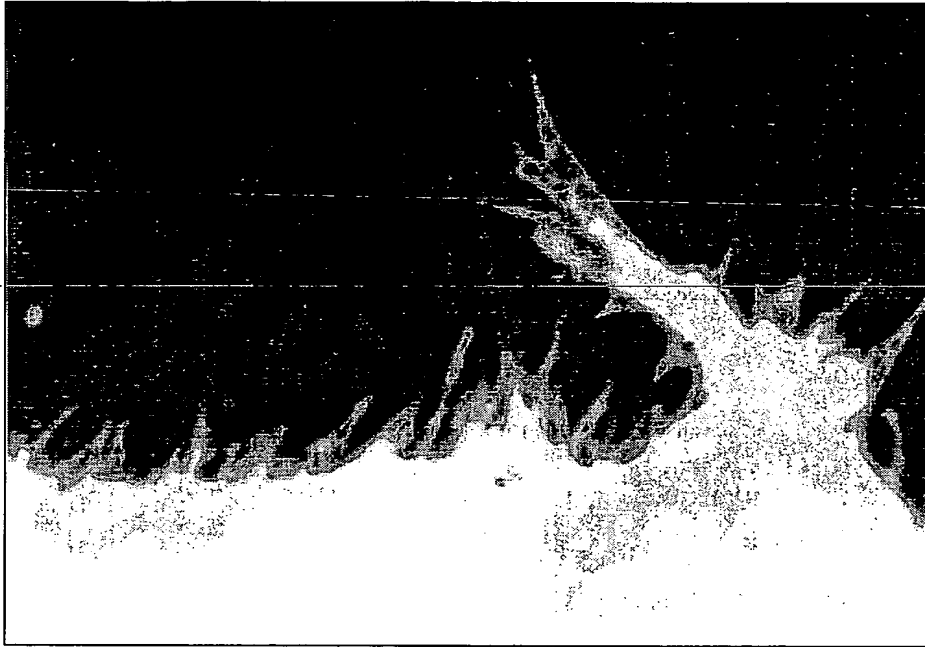


FIG. 26

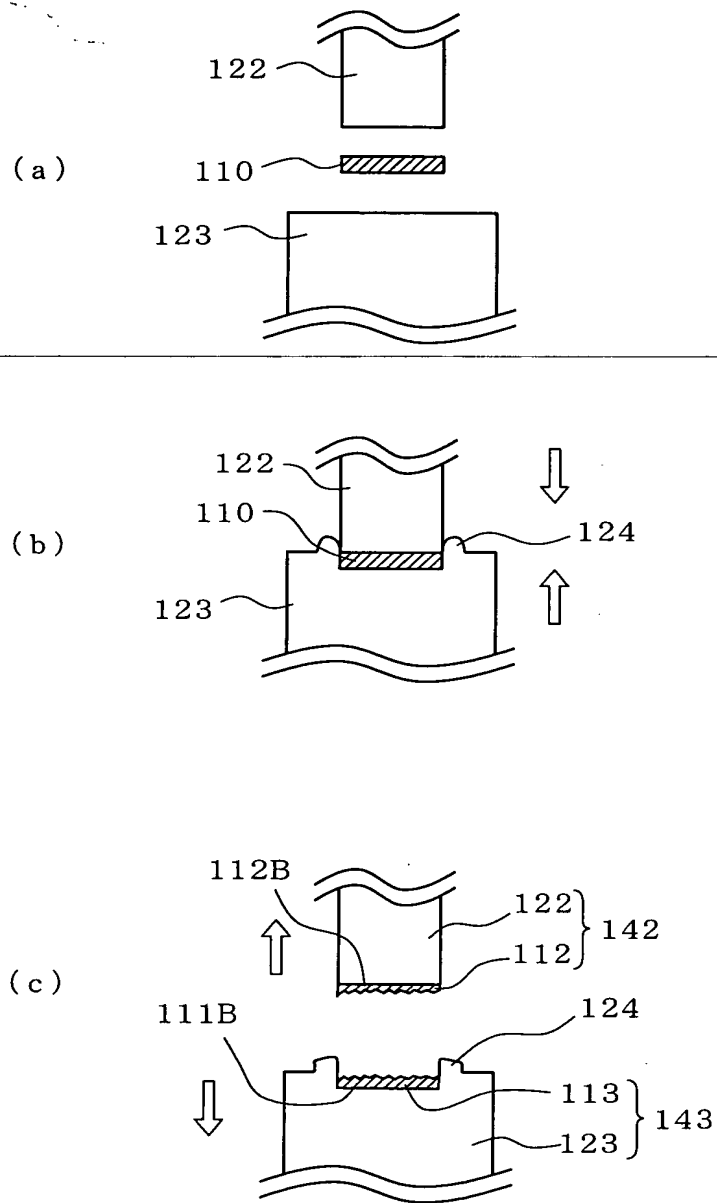


FIG. 27

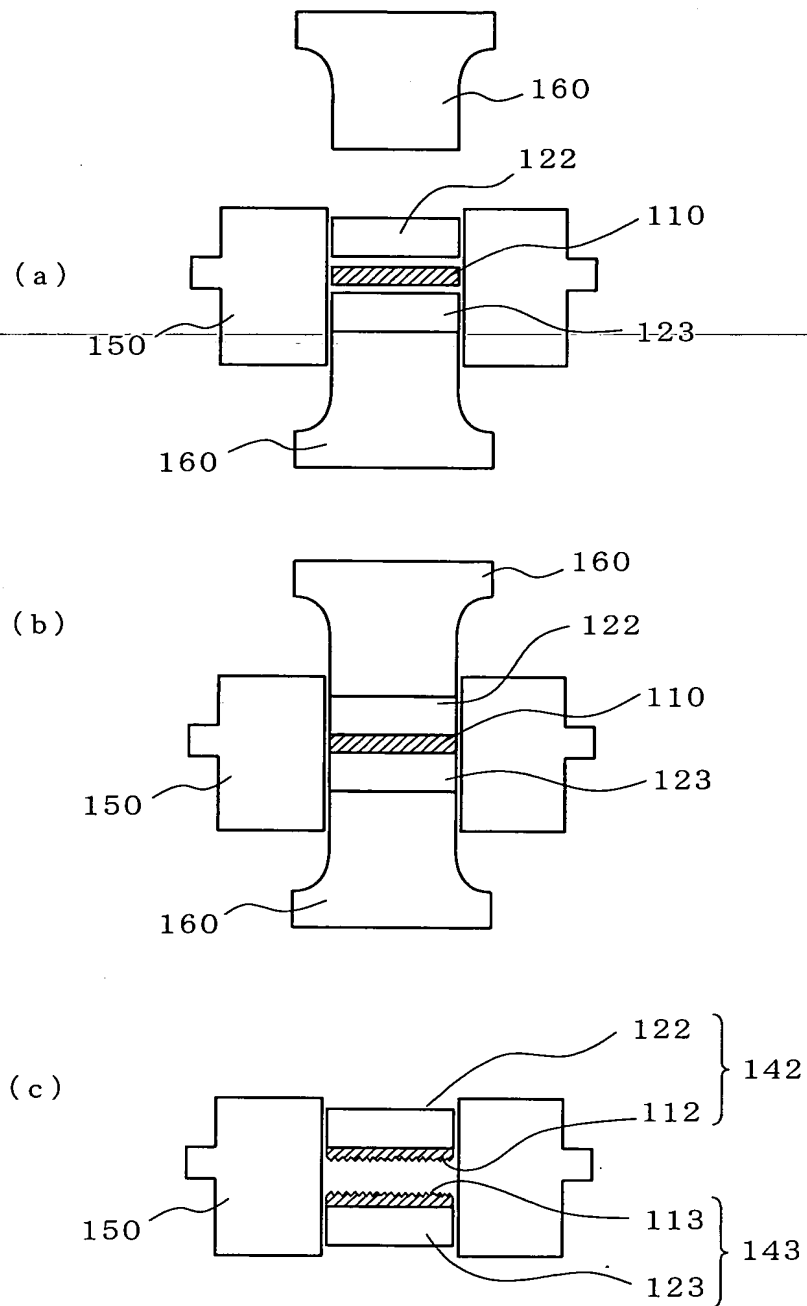


FIG. 28

Field emission property of electrode
(impressed voltage when a predetermined current density is obtained)

Process of electrode production		Impressed voltage
Known process	Paste containing carbon nanotube powder was printed on a substrate; surface was etched to expose carbon nanotubes.	680V
Example 1	Tape-like material was bonded with a silver paste.	440V
Example 2	Tape-like material was pinched between two substrates to apply pressure, and torn.	210V
Example 3	Tape-like material was pinched between a substrates and an indium block to apply pressure, and torn.	192V

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